

Dresden Unit 2

DPR-19

DRAFT Technical Specifications  
Concerning Degraded Voltage Relays

Revised Pages:

41  
43  
147  
148

New Page:

148a

Note: Dresden Unit 3 changes would be  
be identical for pages 41 and 43.  
The proper Unit numbers would be  
the only difference for pages 147,  
148 and 148a.

2761N

8111030216 811028  
PDR ADDCK 05000237  
P PDR

DRAFT

**TABLE 3.2.2 (cont)**

Min. No. of Operable Inst. Channels per Trip System (1)	Trip Function	Trip Level Setting	Remarks
2	Low Pressure Core Cooling Pump Discharge Pressure	50 psig $\leq p \leq$ 100 psig	Defers APR actuation pending confirmation of low pressure core cooling system operation.
2 <sup>(5)</sup> /Bus	Under voltage on Emergency Buses	N/A	1. Initiates starting of diesel generators. 2. Permissive for starting ECCS pumps. 3. Removes non-essential loads from buses.
2	Sustained High Reactor Pressure	$\leq 1070$ psig for 15 seconds	Initiates isolation condenser
2 <sup>(5)</sup> /Bus	Degraded voltage on 4kv Emergency buses.	3805 volts $\pm 2\%$ with 5 $\pm 2\%$ minute time delay	Initiates alarm and picks up time delay relay. Diesel Generator picks up load if degraded voltage not corrected after time delay.

**Notes:**

1. For all positions of the Reactor Mode Selector Switch (except for the containment interlock) whenever any ECCS subsystem is required to be operable, there shall be two operable or tripped trip systems. If the first column cannot be met for one of the trip systems, that system shall be tripped. If the first column cannot be met for both trip systems, immediately initiate an orderly shutdown to cold conditions.
2. Need not be operable when primary containment integrity is not required.
3. May be bypassed when necessary during purging for containment inerting or deinerting.
4. If an instrument is inoperable it shall be placed (or simulated) in the tripped condition so that it will not prevent containment spray.
5. With the number of operable channels one less than the total number of channels, operation may proceed until performance of the next required functional test, provided the inoperable channel is placed in the tripped condition within one hour.

DRAFT

TABLE 4.2.1

MINIMUM TEST AND CALIBRATION FREQUENCY FOR CORE AND CONTAINMENT COOLING  
SYSTEMS INSTRUMENTATION, ROD BLOCKS, AND ISOLATIONS

<u>Instrument Channel</u>	<u>Instrument Functional Test (2)</u>	<u>Calibration (2)</u>	<u>Instrument Check (2)</u>
<u>ECCS INSTRUMENTATION</u>			
1. Reactor Low-Low Water Level	(1)	Once/3 Months	Once/Day
2. Drywell High Pressure	(1)	Once/3 Months	None
3. Reactor Low Pressure	(1)	Once/3 Months	None
4. Containment Spray Interlock			
a. 2/3 Core Height	(1)	Once/3 Months	None
b. Containment High Pressure	(1)	Once/3 Months	None
5. Low Pressure Core Cooling Pump Discharge	(1)	Once/3 Months	None
6. Undervoltage Emergency Bus	Refueling Outage	Refueling Outage	None
7. Degraded Voltage 4kv essential Buses	Refueling Outage	Refueling Outage	None
8. Sustained High Reactor Pressure	(1)	Once/3 Months	None
<u>ROD BLOCKS</u>			
1. APRM Downscale	(1) (3)	Once/3 Months	None
2. APRM Flow Variable	(1) (3)	Refueling Outage	None
3. APRM Upscale (Startup/Hot Standby)	(2) (3)	(2) (3)	(2)
4. IRM Upscale	(2) (3)	(2) (3)	(2)
5. IRM Downscale	(2) (3)	(2) (3)	(2)
6. IRM detector not fully inserted in the core	(2)	N/A	None
7. RBM Upscale	(1) (3)	Refueling Outage	None
8. RBM Downscale	(1) (3)	Once/3 Months	None
9. SRM Upscale	(2) (3)	(2) (3)	(2)
10. SRM Detector Not in Startup Position	(2) (3)	(2) (3)	(2)
<u>MAIN STEAM LINE ISOLATION</u>			
1. Steam Tunnel High Temperature	Refueling Outage	Refueling Outage	None
2. Steam Line High Flow	(1)	Once/3 Months	Once/Day
3. Steam Line Low Pressure	(1)	Once/3 Months	None
4. Steam Line High Radiation	(1) (3)	Once/3 Months (4)	Once/Day

### 3.9 LIMITING CONDITION FOR OPERATION

- (b) One 345 KV line from Unit 3 capable of carrying auxiliary power to an essential electrical bus of Unit 2 through the 4160 volt bus tie.
- 4. (a) 4160 volt buses 23-1 and 24-1 are energized.
- (b) 480 volt buses 28 and 29 are energized.
- 5. The unit 24/48 volt batteries, the two station 125 volt batteries and the two station 250 volt batteries and a battery charger for each required battery are operable.
- B. Except when the reactor is in the Cold Shutdown or Refueling modes with the head off, the availability of electric power shall be as specified in 3.9.A, except as specified in 3.9.B.1, 3.9.B.2, and 3.9.B.3.
- 1. From and after the date that incoming power is available from only one line, reactor operation is permissible only during the succeeding seven days unless an additional line is sooner placed in service providing both the Unit 2 and Unit 2/3 emergency diesel generators are operable. From and after the date that incoming power is not available from any line, reactor operation is permissible providing both the Unit 2 and Unit 2/3 emergency diesel generators are operating and all core and containment cooling systems are operable and the AEC is notified within 24 hours of the situation, the precautions to be taken during this situation, and the plans for prompt restoration of incoming power.

### 4.9 SURVEILLANCE REQUIREMENT

DRAFT

#### B. Station Batteries

- 1. Every week the specific gravity and voltage of the pilot cell and temperature of adjacent cells and overall battery voltage shall be measured.

### 3.9 LIMITING CONDITION FOR OPERATION

2. From and after the date that one of the diesel generators and/or its associated bus is made or found to be inoperable for any reason, reactor operation is permissible according to Specification 3.5/4.5F and 3.9D only during the succeeding seven days unless such diesel generator and/or bus is sooner made operable, provided that during such seven days the operable diesel generator shall be demonstrated to be operable at least once each day and two off-site lines are available.
3. From and after the date that one of the two 125/250 battery systems is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days unless such battery system is sooner made operable.

#### C. Diesel Fuel

There shall be a minimum of 10,000 gallons of diesel fuel supply on site for each diesel.

#### D. Diesel Generator Operability

Whenever the reactor is in the Cold Shutdown or Refueling modes, a minimum of one diesel generator (either the Dresden 2 diesel generator or the unit 2/3 diesel generator) shall be operable whenever any work is being done which has the potential for draining the vessel, secondary containment is required, or a core or containment cooling system is required.

### 4.9 SURVEILLANCE REQUIREMENT

2. Every three months the measurements shall be made of voltage of each cell to nearest 0.01 volt, specific gravity of each cell, and temperature of every fifth cell.

DRAFT

3. Every refueling outage, the station batteries shall be subjected to a rated load discharge test. Determine specific gravity and voltage of each cell after the discharge. If this specification has been complied with for a particular battery for Dresden Unit 3, it shall not be required for Dresden Unit 2.

#### C. Diesel Fuel

Once a month the quantity of diesel fuel available shall be logged.

Once a month a sample of diesel fuel shall be checked for quality.

- D.1. The surveillance requirements are the same as that given in 4.9.A

2. Additionally, during each refueling outage, a simulated loss of off-site power in conjunction with an ECCS initiation signal test shall be performed on the 4160 volt emergency bus by:

DRAFT

- a. Verifying de-energization of the emergency buses, and load shedding from the emergency buses.
- b. Verifying the diesel starts from ambient condition on the auto-start signal, energizes the emergency buses with permanently connected loads, energizes the auto-connected emergency loads through the load sequencer, and operates for  $\geq 5$  minutes while its generator is loaded with the emergency loads.
- c. Verifying that on a diesel generator breaker trip, the loads are shed from the emergency buses, the emergency buses are energized with permanently connected loads, the auto-connected emergency loads are energized through the load sequencer, and the diesel operates while its generator is loaded with the emergency loads.
- d. During each refueling outage, the conditions under which the diesel generator is required will be simulated and a test conducted to demonstrate that it will start and accept the emergency load. If this specification has been complied with for the shared diesel generator (2/3 diesel) for Dresden Unit 3, it shall not be required for Dresden Unit 2.

QUAD CITIES Units 1 and 2

DPR-29 & 30

DRAFT Technical Specifications  
Concerning Degraded Voltage Relays

Revised Pages:

3.2/4.2-12

3.2/4.2-13

3.2/4.2-16

3.9/4.9-1

3.9/4.9-3

3.9/4.9-4

2761N

TABLE 3.2-2

## INSTRUMENTATION THAT INITIATES OR CONTROLS THE CORE AND CONTAINMENT COOLING SYSTEMS

Minimum Number of Operable or Tripped Instrument Channels <sup>(1)</sup>	Trip Function	Trip Level Setting	Remarks
4	Reactor low low water level	$\geq 84$ inches (+ 4 inches/- 0 inch) above top of active fuel*	<ol style="list-style-type: none"> <li>1. In conjunction with low-reactor pressure initiates core spray and LPCI.</li> <li>2. In conjunction with high-drywell pressure 120-second time delay and low-pressure core cooling interlock initiates auto blowdown.</li> <li>3. Initiates HPCI and RCIC.</li> <li>4. Initiates starting of diesel generators.</li> </ol>
4 <sup>(4)</sup>	High-drywell pressure <sup>(2), (3)</sup>	$\leq 2$ psig	<ol style="list-style-type: none"> <li>1. Initiates core spray, LPCI, HPCI, and SGTS.</li> <li>2. In conjunction with low low water level, 120-second time delay, and low-pressure core cooling interlock initiates auto blowdown.</li> <li>3. Initiates starting of diesel generators.</li> <li>4. Initiates isolation of control room ventilation.</li> </ol>
2	Reactor low pressure	$300 \text{ psig} \leq p \leq 350 \text{ psig}$	<ol style="list-style-type: none"> <li>1. Permissive for opening core spray and LPCI admission valves.</li> <li>2. In conjunction with low low reactor water level initiates core spray and LPCI.</li> </ol>
2 <sup>(3)</sup> 4 <sup>(3)</sup>	Containment spray interlock 2/3 core height containment high pressure	$\geq 2/3$ core height $0.5 \text{ psig} \leq p \leq 1.5 \text{ psig}$	Prevents inadvertent operation of containment spray during accident conditions.
2	Timer auto blowdown	$\leq 120$ seconds	In conjunction with low low reactor water level, high-drywell pressure, and low-pressure core cooling interlock initiates auto blowdown.
4	Low-pressure core cooling pump discharge pressure	$100 \text{ psig} \leq p \leq 150 \text{ psig}$	Defers APR actuation pending confirmation of low-pressure core cooling system operation.
2 <sup>(5)</sup> /Bus	Undervoltage on 4 kv emergency buses	N/A	<ol style="list-style-type: none"> <li>1. Initiates starting of diesel generators.</li> <li>2. Permissive for starting ECCS pumps.</li> <li>3. Removes nonessential loads from buses.</li> </ol>

\*Top of active fuel is defined as 360" above vessel zero for all water levels used in the LOCA analysis.



DRAFT

TABLE 3.2-2 (Cont'd)

Minimum Number of Operable or Tripped Instru- ment Channels (1)	Trip Function	Trip Level Setting	Remarks
2 (5) / Bus	Degraded Volt- age on 4KV Emergency Buses	3904 volts + 2% with 5 + 2% minute time delay	Initiates alarm and picks up time delay relay. Diesel Generator picks up load if degraded voltage not corrected after time delay.

NOTES

1. For all positions of the reactor mode selector switch (except for the containment interlock) whenever any ECCS subsystem is required to be operable, there shall be two operable trip systems. If the first column cannot be met for one or both of the trip systems, the systems actuated shall be declared inoperable and Specifications 3.5 or 3.9 shall govern.
2. Need not be operable when primary containment integrity is not required.
3. If an instrument is inoperable, it shall be placed (or simulated) in the tripped condition so that it will not prevent containment spray.
4. There are a total of eight high drywell pressure sensors. Four are used for core spray and LPCI initiation, and four are used for HPCI and auto blowdown initiation. This specification applies to each set of four sensors.
5. With the number of operable channels one less than the total number of channels, operation may proceed until performance of the next required functional test, provided the inoperable channel is placed in the tripped condition within one hour.

DRAFT

TABLE 4.2-1

**MINIMUM TEST AND CALIBRATION FREQUENCY FOR CORE AND CONTAINMENT COOLING SYSTEMS INSTRUMENTATION,  
ROD BLOCKS, AND ISOLATIONS<sup>(7)</sup>**

Instrument Channel	Instrument Functional Test <sup>(2)</sup>	Calibration <sup>(2)</sup>	Instrument Check <sup>(2)</sup>
<b>ECCS Instrumentation</b>			
1. Reactor low-low water level	(1)	Once/3 months	Once/day
2. Drywell high pressure	(1)	Once/3 months	None
3. Reactor low pressure	(1)	Once/3 months	None
4. Containment spray interlock			
a. 2/3 core height	(1)	Once/3 months	None
b. Containment pressure	(1)	Once/3 months	None
5. Low-pressure core cooling pump discharge	(1)	Once/3 months	None
6. Undervoltage 4-kV essential	Refueling outage	Refueling outage	None
7. Degraded Voltage 4kv essential Buses	Refueling outage	Refueling outage	None
<b>Rod Blocks</b>			
1. APRM downscale	(1) (3)	Once/3 months	None
2. APRM flow variable	(1) (3)	Refueling outage	None
3. IRM upscale	(5) (3)	(5) (3)	None
4. IRM downscale	(5) (3)	(5) (3)	None
5. RBM upscale	(1) (3)	Refueling outage	None
6. RBM downscale	(1) (3)	Once/3 months	None
7. SRM upscale	(5) (3)	(5) (3)	None
8. SRM detector not in startup position	(5) (3)	(6)	None
9. IRM detector not in startup position	(5)	(6)	None
10. SRM downscale	(5) (3)	(5) (3)	None
11. High water level in scram discharge volume	Refueling outage	Not applicable	None
<b>Main Steamline Isolation</b>			
1. Steam tunnel high temperature	Refueling outage	Refueling outage	None
2. Steamline high flow	(1)	Once/3 months	Once/day
3. Steamline low pressure	(1)	Once/3 months	None
4. Steamline high radiation	(1) (4)	Refueling outage	Once/day
5. Reactor low low water level	(1)	Once/3 months	Once/day
<b>RCIC Isolation</b>			
1. Steamline high flow	Once/3 months	Once/3 months	None
2. Turbine area high temperature	Refueling outage	Refueling outage	None
3. Low reactor pressure	Once/3 months	Once/3 months	None

DRAFT**3.9/4.9 AUXILIARY ELECTRICAL SYSTEMS****LIMITING CONDITIONS FOR OPERATION****Applicability:**

Applies to the auxiliary electrical power system.

**Objective:**

To assure an adequate supply of electrical power during plant operation.

**SURVEILLANCE REQUIREMENTS****Applicability:**

Applies to the periodic testing requirement of the auxiliary electrical system.

**Objective:**

To verify the operability of the auxiliary electrical system.

**SPECIFICATIONS****A. Normal and Emergency A-C Auxiliary Power**

The reactor shall not be made critical unless all the following requirements are satisfied.

1. The Unit diesel generator and the Unit 1/2 diesel generator shall be operable.

**A. Normal and Emergency A-C Auxiliary Power**

1. a. Each diesel generator shall be manually started and loaded once each month to demonstrate operational readiness. The test shall continue until both the diesel engine and the generator are at equilibrium conditions of temperature while full load output is maintained.
- b. During the monthly generator test, the diesel-starting air compressor shall be checked for operation and its ability to recharge air receivers.
- c. During the monthly generator test, the diesel fuel oil transfer pumps shall be operated.

2. One 345-kV line, associated switchgear, and the reserve auxiliary power transformer capable of carrying power.

2. The status of the 345-kV lines, associated switchgear, and the reserve auxiliary power transformer shall be

DRAFT

unless an additional line is sooner placed in service, providing both the Unit and Unit 1/2 emergency diesel generators are operable.

2. From and after the date the incoming power is not available from any line, continued reactor operation is permissible providing both the Unit and Unit 1/2 emergency diesel generators are operating, all core and containment cooling systems are operable, reactor power level is reduced to 40% of rated, and the NRC is notified within 24 hours of the situation, the precautions to be taken during this period, and the plans for prompt restoration of incoming power.
3. From and after the date that one of the two 125/250-volt battery systems is made or found to be inoperable for any reason, continued reactor operation is permissible only during the succeeding 3 days unless such battery system is sooner made operable.

#### D. Diesel Fuel

There shall be a minimum of 10,000 gallons of diesel fuel supply on site for each diesel generator.

#### D. Diesel Fuel

Once a month the quantity of diesel fuel available shall be logged.

Once a month a sample of diesel fuel shall be checked for quality.

#### E. Diesel-Generator Operability

1. Whenever the reactor is in the Startup/Hot Standby or Run mode and the unit or shared diesel generators and/or their respective associated buses are made or found to be inoperable for any reason, except as specified in Specification 3.9.E.2 below, continued reactor operation is permissible only during the succeeding 7 days provided that all of the low-pressure core cooling and all loops of the containment cooling mode of the RHR system associated with the operable diesel generator shall be operable, and two offsite lines are available. If this requirement cannot be met, an orderly shutdown shall be initiated and the

#### E. Diesel-Generator Operability

1. When it is determined that either the unit or shared diesel generator is inoperable, all low-pressure core cooling systems and all loops of the containment cooling modes of the RHR system associated with the operable diesel generator shall be demonstrated to be operable immediately and daily thereafter. The operable diesel generator shall be demonstrated to be operable immediately and daily thereafter.
2. During each refueling outage, a simulated loss of off-site power in conjunction with an ECCS initiation signal test shall be performed on the 4160 volt emergency bus by:

DRAFT

QUAD-CITIES

DPR-29 & 30

reactor shall be in the cold shutdown condition within 24 hours.

2. Specification 3.9.E.1 shall not apply when a diesel generator has been made inoperable for a period not to exceed 1-1/2 hours for the purpose of conducting preventative maintenance. Additionally, preventative maintenance shall not be undertaken unless two off site lines are available and the alternate diesel generator has been demonstrated to be operable.

3. Whenever the reactor is in the Cold Shutdown or Refueling mode, a minimum of one diesel generator (either the Unit diesel generator or the Unit 1/2 diesel generator) shall be operable whenever any work is being done which has the potential for draining the vessel, secondary containment is required, or a core or containment cooling system is required.

- a. Verifying de-energization of the emergency buses, and load shedding from the emergency buses.
- b. Verifying the diesel starts from ambient condition on the auto-start signal, energizes the emergency buses with permanently connected loads, energizes the auto-connected emergency loads through the load sequencer, and operates for > 5 minutes while its generator is loaded with the emergency loads.
- c. Verifying that on a diesel generator breaker trip, the loads are shed from the emergency buses, the emergency buses are energized with permanently connected loads, the auto-connected emergency loads are energized through the load sequencer, and the diesel operates while its generator is loaded with the emergency loads.